

CLAIM(S)

What is claimed is:

1. A method for printing colors outside the gamut of an image output device, comprising the steps of:
  - 5 experimentally determining a relationship between an input primary and an output primary;
  - mapping the input primary to an output primary;
  - mapping an output of gamut primary to a placement of desired printer primaries.
- 10 2. The method of claim 1 further comprising combining the mapping of the out of gamut primary with an inside the gamut profile.
3. The method of claim 1 further comprising creating a transformation table, the transformation table comprising an inside the gamut profile and the mapping an output of  
15 gamut primary to a placement of desired printer primaries.
4. The method of claim 3, the steps further comprising:
  - receiving an image input from an image input device, the image comprising colors inside the gamut and outside the gamut; and
  - 20 converting the image colors to output colors via the transformation table.
5. The method of claim 3 wherein a plurality of transformation tables are created, each transformation table is mapped to an image input profile.
- 25 6. The method of claim 5, the steps further comprising:
  - receiving an image input from an image input device, the image comprising colors inside the gamut and outside the gamut;
  - determining a profile for the image input;

selecting one of the plurality of transformation tables that matches the profile; and  
converting the image colors to output colors via the transformation table.

7. The method of claim 1 wherein the image output device has a mode selected  
5 from the group consisting of perceptual, saturation and colorimetric.

8. An apparatus for mapping an image input profile to an image output device,  
comprising:

means adapted to experimentally determine a relationship between an input primary  
10 and an output primary;

means adapted to map the input primary to an output primary;

means adapted to map an output of gamut primary to a placement of desired printer  
primaries.

9. The apparatus of claim 8 further comprising means adapted to combine the  
15 mapping of the out of gamut primary with an inside the gamut profile.

10. The apparatus of claim 8 further comprising means adapted to create a  
transformation table, the transformation table comprising an inside the gamut profile and the  
20 mapping an out of gamut primary to a placement of desired printer primaries.

11. The apparatus of claim 10 further comprising:

means adapted to receive an image input from an image input device, the image  
comprising colors inside the gamut and outside the gamut; and

25 means adapted to converting the image colors to output colors via the transformation  
table.

12. The apparatus of claim 10 wherein a plurality of transformation tables are

created, each transformation table is mapped to an image input profile.

13. The apparatus of claim 12 further comprising:  
means adapted to receive an image input from an image input device, the image  
5 comprising colors inside the gamut and outside the gamut;  
means adapted to determine a profile for the image input;  
means adapted to select one of the plurality of transformation tables that matches the  
profile; and  
means adapted to convert the image colors to output colors via the transformation  
10 table.

14. A computer readable medium of instructions having computer readable code  
encoded thereon for mapping an image input profile to an image output device, comprising:  
means adapted to experimentally determine a relationship between an input primary  
15 and an output primary;  
means adapted to map the input primary to an output primary;  
means adapted to map an output of gamut primary to a placement of desired printer  
primaries.

20 15. The computer readable medium of claim 14 further comprising means adapted  
to combine the mapping of the out of gamut primary with an inside the gamut profile.

16. The computer readable medium of claim 14 further comprising means adapted  
to create a transformation table, the transformation table comprising an inside the gamut  
25 profile and the mapping an output of gamut primary to a placement of desired printer  
primaries.

17. The computer readable medium of claim 16, further comprising:

means adapted to receive an image input from an image input device, the image comprising colors inside the gamut and outside the gamut; and

means adapted to converting the image colors to output colors via the transformation table.

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18. The computer readable medium of claim 10 wherein a plurality of transformation tables are created, each transformation table is mapped to an image input profile.

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19. The computer readable medium of claim 18 further comprising:  
means adapted to receive an image input from an image input device, the image comprising colors inside the gamut and outside the gamut;  
means adapted to determine a profile for the image input;  
means adapted to select one of the plurality of transformation tables that matches the  
15 profile; and

means adapted to convert the image colors to output colors via the transformation table.

20. An image output apparatus, comprising:  
20 means adapted to communicate with a transformation table, the transformation table comprising means adapted to map an input primary to an output primary and means adapted to map an out of gamut primary to a placement of desired printer primaries;  
means for receiving an image comprising a plurality of colors from an image input device;

25 wherein an output image is created by transforming the plurality of colors from the input image device via the transformation table and at least one of the plurality of colors is outside the image output device's gamut.

21. The apparatus of claim 20 wherein the image input device is selected from the group consisting of a monitor, a scanner, and a digital camera.

22. The apparatus of claim 20 wherein the means to communicate comprises  
5 means to communicate to a plurality of transformation tables, further comprising:  
means adapted to determine an input profile; and  
means adapted to select an appropriate transformation table from the transformation  
table based on the input profile.

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